



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Attorney Docket No. 006401.00399)

In re U.S. Patent Application of:)
Antrim et al.)
)
Application No. 10/601,912) Group Art Unit 1623
)
Filed: June 23, 2003) Examiner: Devesh Khare
)
For: DEXTRINIZED, SACCHARIDE-)
DERIVATIZED)
OLIGOSACCHARIDES)

Commissioner of Patents
P.O. Box 1450
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APPEAL BRIEF

This constitutes applicants' brief on appeal. The information specified by 37 C.F.R. 41.37 (c)(1) is provided hereunder.

Real Party In Interest

The real party in interest in this application is Grain Processing Corporation of Muscatine, Iowa, the assignee.

Related Appeals and Interference

None known.

Status of Claims

Claims 1-10, 34, and 35 are pending in the application. All claims stand as rejected, and all are appealed.

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It is noted that the claims were originally allowed by way of Notice of Allowance mailed on November 15, 2005. However, on February 15, 2006, a Notice of Withdrawal from Issue was mailed.

Status of Amendments

No amendments have been filed subsequent to final rejection.

Summary of Claimed Subject Matter

Claim 1 is the sole independent claim. As specified therein, a saccharide-derivatized oligosaccharide mixture may be prepared in an extruder. Specifically, two materials, a saccharide product that has an average degree of polymerization that ranges from 1-4, and a mixture of malto-oligosaccharides, are reacted in an extruder. Upon extrusion, sufficient heat and work are imparted to the mixture of malto-oligosaccharides and the saccharide to derivatize at least some of the malto-oligosaccharides with the saccharide. The derivatization reaction is catalyzed with an acid.

The extrusion reaction product is not merely a mixture of the two starting materials. Rather, at least some of the malto-oligosaccharides are chemically modified; i.e., they are derivatized with the saccharide.

Essentially the entire specification supports the claimed subject matter. For instance, page 4, line 26 *et seq.* discusses the extrusion of a saccharide with malto-oligosaccharide. The discussion of acid catalysis is provided, for instance, at page 9, line 3 *et seq.* The term “extrusion reaction” is supported, for instance, by the disclosure at p. 10, l. 4 *et seq.* The Examples provide further support.

Grounds of Rejection to be Reviewed on Appeal

There are two grounds of rejection in the final Office Action.

First, the Examiner finds the term “extrusion reaction” to be vague. Although the term “extrusion reaction” is a common term of art, and indeed appears *in the claims of other U.S.*

patents, the Examiner has rejected the claims under 35 U.S.C. §112. The first ground of rejection is whether the examiner erred in so rejecting the claims.

Second, the examiner contends that the claims are anticipated by Levine, U.S. 5,009,900. Levine is a reference that purports to disclose the extrusion of a mixture of products that includes a malto-oligosaccharide and a saccharide. Based on this disclosure, the Examiner contends that Levine discloses the claimed subject matter. However, Levine expressly teaches that the conditions in the extruder are such that the materials extruded *do not react*. In Levine, there is no derivatization, and thus the claimed product is not formed. Levine thus fails to anticipate the claims. The second issue for appeal is whether the examiner erred in rejecting the claims over Levine.

Argument

The Section 112 Rejection is Improper – Applies to All claims

First, the examiner has asserted that the term “extrusion reaction” is unclear. This term is fully supported by the specification, is a common term of art, and indeed is used in the claims of other U.S. patents (where, of course, the term is presumed to satisfy 35 U.S.C. §112). It appears that the basis of the rejection in that Examiner is not personally familiar with this term, but this is hardly a basis for maintaining the rejection.

As an initial matter, the term “extrusion reaction” is supported by the specification. As the specification teaches, an “extrusion reaction” is a reaction between the indicated reaction components, the reaction being accomplished in an extruder. At page 10, line 4 *et seq.*, the specification indicates that “the starting materials are combined and reacted in an extruder.”

Surely, the Examiner can find no fault individually with either the term “extrusion” or “reaction,” nor could the Examiner find the specification lacking as to the details of the claimed invention. Extruders are well known in the art, and both extrusion and reaction conditions are described in the specification, for instance at page 10. Certain preferred reaction conditions are provided on p. 10, as is a description of a particular extruder (Wenger TX-57). Beginning at page 15, the specification provides numerous examples. For instance, Examples 1-18 (reported in the table that bridges pp. 16 and 17) show the extrusion reaction of numerous saccharides and

malto-oligosaccharides. The specification then sets forth results of various analyses of these products. In subsequent examples, extrusion conditions are varied, and the effect on the reaction that occurs in the extruder is noted.

Even if the term “extrusion reaction” were not a term of art, the foregoing disclosure would constitute sufficient support for this term. But beyond the specification, one need only look to other U.S. patents. The Board is invited to review U.S. patents 6,803,004 (claim 12); 6,221,332 (claim 5); 4,490,519 (claim 1); 4,465,819 (claim 80); and 4,415,721 (claim 1) for other uses of this term or phonetic variants thereof. Under 35 U.S.C. 112 and 282, each of these patents is presumed to be valid. This means that the Examiner is *presumed to be wrong* for rejecting this term.

Beyond the foregoing, the term “extrusion reaction” is used elsewhere in the technical literature. For instance, U.S. Patent 6,506,840 refers, in its Abstract, to an “extrusion reaction.” Generally, in the specification, reaction of components inside an extruder is described. Outside the patent literature, a GOOGLE search reports several hundred hits for the term “extrusion reaction.”

Applicants see no basis for maintaining the Section 112 rejection. In maintaining the rejection, the Examiner is ignoring the many Examples in the specification, is overlooking the teachings in the specification that “the starting materials are combined and reacted in an extruder,” and is failing to consider all of the technical literature that uses the term “extrusion reaction.” Even more problematic for the Examiner, he is ignoring the fact that a number of issued U.S. patents use the term “extrusion reaction” in the claims and elsewhere. Plainly, the Examiner is wrong, and the 112 rejection must be reversed.

The Rejection over Levine is Improper – Applies to All claims

With regard to the Levine reference, this reference fails to teach a reaction product that comprises a saccharide-derivatized malto-oligosaccharide. In Levine, an extruder is indeed used, but the extruder is used merely to *mix* the components, not to cause a chemical reaction between the components. Accordingly, Levine does not disclose a “reaction product,” as specified in the claims. Put another way, the product of Levine is not a malto-saccharide that is derivatized with

a saccharide. Levin's product is an extruded mixture of malto-oligosaccharides and saccharides, with no derivatization.

The extrusion of Levine does not cause derivatization because the conditions in the extruder – low temperature and absence of catalyst -- are insufficient to cause derivatization. Indeed, Levine expressly teaches that derivatization does not (and should not) occur. With respect to temperature, at Col. 8, lines 57-58, Levine teaches that exposure to certain temperatures would produce “undesirable damage to the carbohydrates.”

With respect to acid catalysis, Levine is likewise silent. The term “catalyst” does not appear in Levine. Similarly, Levine generally does not teach to employ an acid. Only in Example 2 does Levine disclose the use of an acid (malic acid, which Levine employs “to provide a desirable tart taste”). In Example 2, the extruder is operated at a temperature not exceeding 118° C, which is less than the melting point of malic acid and which therefore is insufficient to cause malic acid to function as a catalyst. Of course, Levine would not want malic acid to operate as a catalyst, because that would cause “undesirable damage.”

Levine thus fails to teach or suggest the claimed invention, and Levine indeed teaches away from the invention with his teachings to avoid modifying the carbohydrate. For this reason, all of the claims of the present invention are patentable over Levine.

The Examiner apparently does not disagree with applicants' characterization of Levine, and he has failed to provide any rebuttal of the foregoing argument. Indeed, the Examiner's basis for maintaining the rejection is incomprehensible. He states that “in a composition claim there is no patentable weight is given [sic] how the individual components are produced.” Applicants do not understand this argument – it is irrelevant how the individual components are produced. If the Examiner is attempting to assert that Levine's process conditions should be ignored, the Examiner is mistaken. Levine's process conditions do not lead to a derivatized product.

In any case, the Examiner has failed to show that Levine provides a derivatized product. The rejection over Levine therefore must be reversed.

Claim 35 is Patentable over Levine for Additional Reasons

The Examiner has not explained his reasoning with regard to claim 35, and accordingly the rejection of this claim should be reversed on this basis alone. In any case, the temperature range of claim 35 is not found in Levine, and Levine cannot anticipate this claim. Claim 35 specifies an internal sample temperature in the range of 160° to 275°C. Levine teaches upper temperature limit of 150° C, and that the extruded material preferably leaves the extruder at a temperature of no more than 125°C.

Conclusion

For these reasons, the rejections entered in the Final Rejection cannot stand. Reversal of the claim rejections is respectfully solicited.

Respectfully submitted,

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Claims Appendix

1. (Previously Presented) A saccharide-derivatized oligosaccharide mixture comprising the extrusion reaction product of a saccharide product having an average degree of polymerization ranging from 1 to 4 with a mixture of malto-oligosaccharides, wherein upon extrusion sufficient heat and work are imparted to said mixture of malto-oligosaccharides and said saccharide to derivatize at least some of said malto-oligosaccharides with said saccharide, the derivatization being catalyzed with an acid.
2. (Previously presented) A mixture according to claim 1, at least about 75% of the malto-oligosaccharides in said mixture having a degree of polymerization greater than 5.
3. (Original) A mixture according to claim 1, said saccharide product consisting essentially of dextrose.
4. (Original) A mixture according to claim 3, said dextrose being in monohydrate form.
5. (Original) A mixture according to claim 1, said saccharide product consisting essentially of a mixture of dextrose and hydrogenated starch hydrolyzate, said product including about 50% to about 95% by weight of said hydrogenated starch hydrolyzate.
6. (Original) A mixture according to claim 5, said starch hydrolyzate being sorbitol.
7. (Original) A mixture according to claim 1, said saccharide product consisting essentially of maltose.
8. (Original) A mixture according to claim 1, said saccharide product consisting essentially of maltotriose.

9. (Original) A mixture according to claim 1, said saccharide product consisting essentially of maltotetraose.

10. (Original) A mixture according to claim 1, said saccharide product comprising a mixture of dextrose and at least one other saccharide.

11-33. (Canceled).

34. (Previously presented) A mixture according to claim 1, said malto-oligosaccharide comprising a maltodextrin and said saccharide-derivatized oligosaccharide mixture comprising a saccharide-derivatized maltodextrin.

35. (New) A mixture according to claim 1, the mixture comprising the extrusion reaction product of said saccharide with said mixture of malto-oligosaccharides, said extrusion being performed with an internal sample temperature in the range of 160° to 275°C.

Evidence Appendix

None.

Related Proceedings Appendix

None.